

Three new species of *Latrobea* (Leguminosae: Mirbelieae) from south-western Australia

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Abstract

Wilkins, C.F. & Chappill, J.A. Three new species of *Latrobea* (Leguminosae: Mirbelieae) from south-western Australia. *Nuytsia* 17: 483–492 (2007). Three species of *Latrobea* Meisn. from south-western Australia which are part of the Mirbelieae tribe are here described as new, *L. colophona* Chappill & C.F.Wilkins, *L. pinnacula* Chappill & C.F.Wilkins, and *L. recurva* Chappill & C.F.Wilkins. They are described prior to generic revision, as they are either declared as rare or are listed as priority species under the Western Australian Department of Environment and Conservation (DEC) Conservation Codes for Western Australian Flora.

Introduction

Latrobea Meisn. is a genus of small, pea-flowered shrubs endemic to areas of higher rainfall in south-western Australia. It was named by Meisner in 1848, after Charles Joseph La Trobe who was Lieutenant Governor of Victoria from 1839–1854. *Latrobea* has six currently described taxa and is distinctive in having a standard with a mainly hooded and peaked, or obtuse apex, rather than an emarginate apex. This character is not unique to *Latrobea*, however, as *Daviesia abnormis* F.Muell, previously included in *Latrobea* as *L. abnormis* (F.Muell.) Druce, also shares this feature. This species was later transferred back to *Daviesia* Sm. due to its having triangulate fruit and strongly pungent leaves, characters which are more typical of this genus (Crisp 1995).

Latrobea was supported as monophyletic in recent molecular phylogenetic analyses (Orthia *et al.* 2005). However, the genus was nested within the *Pultenaea* Sm. *s. lat.* group of Mirbelieae genera. If *Latrobea* is to be made synonymous with *Pultenaea*, it is unlikely that this will happen in the short term and the current generic delimitation is maintained for the present paper.

Methods

Specimens of *Latrobea* from PERTH and MEL were examined. Duplications or specimens in other Herbaria may have been annotated previously by Chappill but not seen by Wilkins. Morphological information was measured and recorded from dried and rehydrated material. Distribution maps were produced using Online Map Creation (http://www.aquarius.geomar.de/omc_intro.html). Precise localities are withheld due to conservation concerns.

The manuscript names *Latrobea elliptica* Chappill & C.F.Wilkins ms and *L. obovata* Chappill & C.F.Wilkins ms have been changed to *L. pinnacula* Chappill & C.F.Wilkins and *L. colophona* Chappill & C.F.Wilkins respectively, because if the generic revision proposed by Orthia *et al.* (2005) were ever formalised, then the species epithets *elliptica* and *obovata* are already taken under *Pultenaea*.

Species descriptions

Latrobea colophona Chappill & C.F.Wilkins, *sp. nov.*

Latrobea recurvae Chappill & C.F.Wilkins affinis sed foliis obovatis, densioribus, rectis, ad apicem convexis, et lobis carycis longioribus differt.

Typus: Stirling Range, Western Australia [precise locality withheld for conservation purposes], 25 November 1982, A. Strid 21563 (*holo*: PERTH 00714968; *iso*: MEL).

Latrobea obovata Chappill ms, *in. sched.*

Latrobea obovata Chappill & C.F.Wilkins ms, Western Australian Herbarium, in FloraBase, <http://florabase.dec.wa.gov.au/> [accessed May 2007].

Shrub erect, 0.25–1 × 0.5 m. *Stems* grey-green or red, with green, flat spots or tubercles, present or absent, ribbed, with dense, appressed or spreading, straight or wavy hairs *c.* 0.25–0.6 mm long. *Stipules* caducous, dark red, oblong-linear, erect, 0.15–0.2 × 0.1 mm. *Leaves* dense, overlapping, ascending; *petiole* pale yellow, wrinkled, 0.25–0.8 mm long; *blade* with tapering base, concolorous, grey-green, minute red spots present or absent, not glaucous, flat at base to concave towards apex, narrowly-obovate, 3.5–9.0 × 1.1–3.2 mm, one prominent vein on abaxial surface, apical leaves not or slightly tuberculate, with moderately dense hairs, 0.2–0.8 mm long on margin, adaxial and abaxial surfaces, mature leaves glabrescent; margin entire or minutely denticulate, flat, apex straight, with apiculum dark red, deciduous or persistent, *c.* 0.1 mm long. *Flowers* 1–3 axillary, without enclosing floral leaves. *Bracts* ovate, 0.8–2.5 × 0.6–1.4 mm, margins with sparse, spreading, straight hairs *c.* 0.2 mm long. *Bracteoles* caducous from mid pedicel, narrowly-ovate to filiform, 1.3–2.8 × 0.3–0.8 mm, margins with sparse, spreading, straight white hairs *c.* 0.1 mm long. *Pedicels* 1.5–3.6 mm long. *Buds* yellow-green with scattered to medium density, spreading, white hairs *c.* 0.5 mm long, with 5 faint ribs, petals emerging from calyx before buds are fully developed, mature buds *c.* 6 × 2.5 mm, apiculum on lobe apex straight, dark red, 0.15 mm long. *Hypanthium* 0.5–0.7 mm long. *Calyx* tube 0.5–1.5 mm long, lobes valvate, symmetrical, all split to same level, 4.0–4.8 × 0.6–1.1 mm, marginal and inner surface hairs present. *Standard* claw 1.1–1.6 × 0.45–0.6 mm, lamina bright yellow with cream spot at base, sagittate, 6.5–7.8 × 6.5–7 mm, auricles absent, apex hooded, acute and incurved. *Wing* claw curved, 1.6 mm long, lamina yellow with red markings at base, 6.1–6.7 × 1.8–2 mm, slightly broader toward apex, auricles at base of abaxial and adaxial margins, apex obtuse. *Keel* claw straight, *c.* 1.4 × 0.3 mm, lamina yellow, 5.7–6.8 × 2.3–2.6 mm, upper margin minutely papillate, apex obtuse and straight. *Stamen* filaments uniform length and width, or scarcely alternating shorter and longer, 4.6–6.3 × 0.15–0.2 mm; *anthers* white, with red connective, dorsifixed, uniform size, 0.3–0.6 × 0.3 mm. *Gynoeceium* stipe 0.5–0.55 mm long, ovary 1.3–2 × 0.5–0.7 mm, outer surface densely hairy; *style* filiform, attachment to ovary well defined, *c.* 4.0 × 0.1 mm with minute terminal *stigma*; *ovules* 2, funicles *c.* 0.2 mm long. *Fruit* and *seed* not seen. (Figure 1)

Selected specimens. WESTERN AUSTRALIA: [localities withheld] 1 Dec. 2004, S. Barrett 1303 (PERTH 06874150); 25 Apr. 2003, S. Barrett 1308 (PERTH 06990452); 21 Dec. 2005, S. Barrett 1513 (PERTH 07434103); 6 Jan. 1978, E. Mullins 381 (CANB); 25 Oct. 1985, E. & S. Pignatti 1543 (CANB, MEL, NSW, PERTH 00783757).

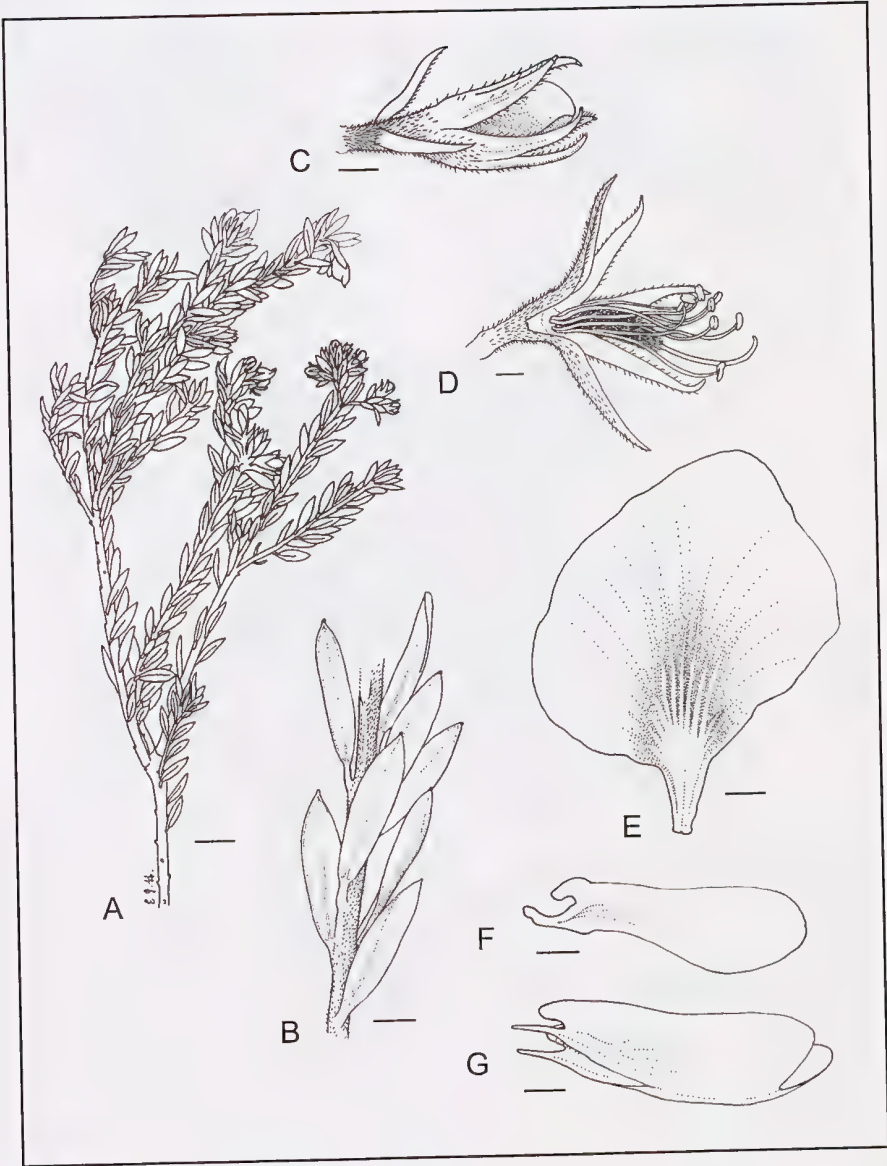


Figure 1. *Latrobea colophona*. A – erect habit; B – branch detail showing leaves obovate, dense and apex concave on lower surface; C – bud showing hairy calyx, emergent petals and bracteoles on pedicel; D – calyx with free filaments, anthers and style showing as petals removed; E – standard; F – wing; G – keel. Drawn from the holotype (*A. Strid* 21563). Scale bars = 8 mm (A); 2 mm (B); 1 mm (C–G).

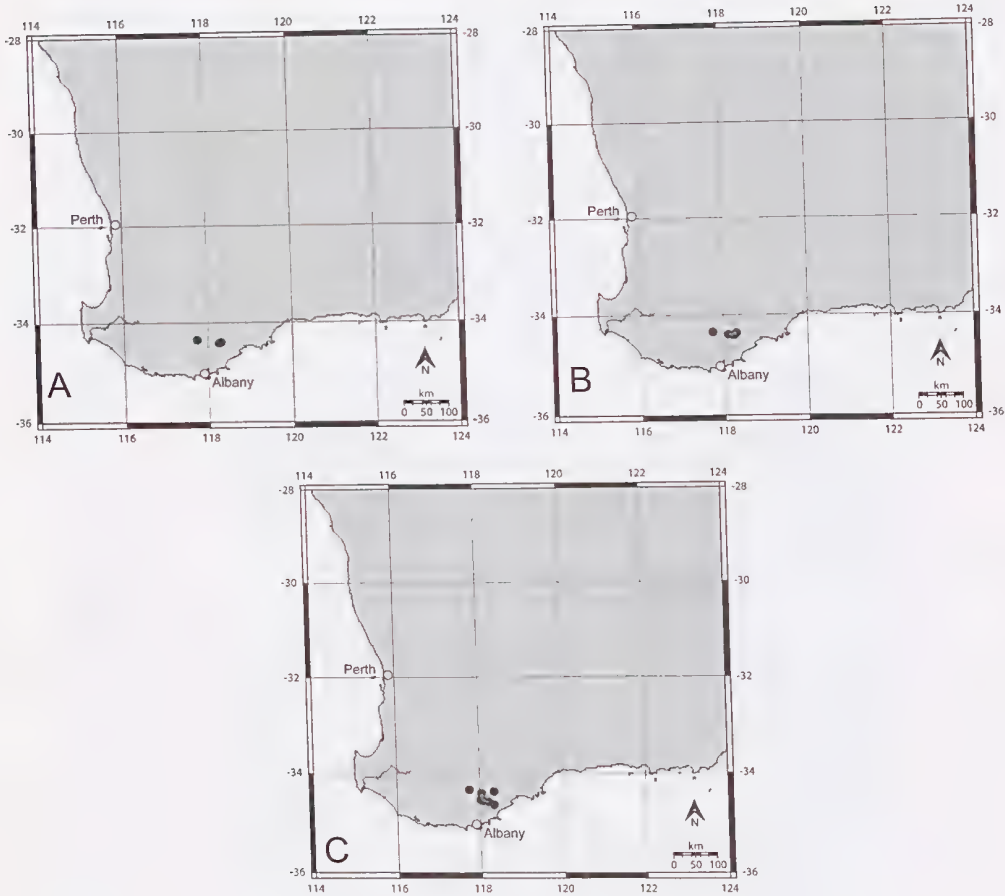


Figure 2. Distribution in south-west Western Australia of A – *Latrobea colophona*; B – *L. pinnacula*; C – *L. recurva*.

Distribution and habitat. *Latrobea colophona* is only known from the Stirling Range in Western Australia (Figure 2A). This species occurs in heathland, or dense scrub on quartzite or sandstone shale in sandy-clay.

Flowering period. October to December.

Etymology. The specific epithet *colophona* (Gr. *kolophon* = peak) refers to the area in which this species occurs.

Chromosome number. Unknown.

Conservation status. This species only occurs in three, small populations in the Stirling Ranges and is currently accorded Declared Rare Flora status under the Western Australian Wildlife Conservation Act 1950 (Atkins 2006), under the name *L. obovata* ms. It is threatened by *Phytophthora cinnamomi* and grazing (Barrett 1503 in sched.).

Notes. *Latrobea colophona* is distinguished from *L. recurva* Chappill & C.F. Wilkins by having denser, straight leaves with a concave apex, and longer calyx lobes that are 4.0–4.8 mm long rather than 2.5–3.5 mm long.

Latrobea pinnacula Chappill & C.F. Wilkins, *sp. nov.*

Latrobea hirtellae (Turcz.) Benth. affinis sed stipulis praesentibus, foliis ellipticis, glabris vel non nisi ad basim sparse pilosis, lobis calycis brevioribus et floribus parvioribus differt.

Typus: Stirling Range, Western Australia [precise locality withheld for conservation purposes], 18 January 1979, *M.D. Crisp* 5272 (*holo:* PERTH 05483395; *iso:* CANB 7901584, NSW).

Latrobea elliptica Chappill ms, *in. sched.*

Latrobea elliptica Chappill & C.F. Wilkins ms, Western Australian Herbarium, in FloraBase, <http://florabase.dec.wa.gov.au/> [accessed May 2007].

Shrub erect and spreading, or prostrate, 0.2–0.7 × 0.5 m. *Stems* red or green with green tubercles, ribbed, with moderately dense, mainly appressed hairs *c.* 0.3 mm long, sometimes intermixed with scattered, spreading, straight hairs to 1.0 mm long. *Stipules* caducous, red-brown, linear-oblong, erect, 0.1–0.3 × 0.1 mm. *Leaves* mainly sparse, sometimes overlapping, spreading; *petiole* pale yellow, wrinkled, 0.3–0.8 mm long; *blade* with tapering base, concolorous, dull grey-green, with dense, dark red dots present or absent, not glaucous, concave at midvein, or flat, mainly elliptical or rarely ovate, 1.0–8.5 × 0.8–4.1 mm, abaxial surface with one prominent vein, mature leaves glabrous, or with scattered hairs, *c.* 0.2 mm long at base of leaf, tuberculate; margin entire or minutely denticulate, recurved, apex recurved with apiculum dark red, deciduous or persistent, *c.* 0.1 mm long. *Flowers* 1–5 in loose apical clusters, without enclosing floral leaves. *Bracts* ovate, or narrowly-ovate, 0.8–1.7 × 0.4–1 mm, glabrous. *Bracteoles* persistent or caducous, on mid or lower pedicel, ovate or narrowly-ovate, 1.3–1.8 × 0.4–0.6 mm, glabrous or with marginal hairs to 0.2 mm long. *Pedicels* 3.3–5.8 mm long. *Buds* green or green with fine, red markings, with scattered, white, spreading hairs *c.* 0.2 mm long, on tubular portion of calyx only, with 5 faint ribs, petals emerging from calyx before buds are fully developed, mature buds 2.8–4.5 × 1.8–1.9 mm, lobe apex with apiculum, dark red, straight, 0.1–0.15 mm long. *Hypanthium* 0.35–0.5 mm long. *Calyx* tube 0.8–1 mm long, lobes valvate, symmetrical, all split to same level, 1.9–2.2 × 0.65–1.2 mm, marginal hairs absent or present. *Standard* claw 0.7–1.3 × 0.3–0.5 mm, lamina yellow with cream eye fringed with red, sagittate, 4.5–6.3 × 5.7–6.7 mm, auricles absent, apex hooded, acute and incurved. *Wings* claw curved, 0.7–1.1 mm long, lamina yellow with red markings at base, broader towards apex, 4.2–5.2 × 1.6–2 mm, auricles at base of adaxial margin, apex obtuse. *Keel* claw straight, *c.* 0.7–1.7 mm long, lamina orange-red or yellow-green, 4.3–5.7 × 2.5 mm, upper margin minutely papillate, apex obtuse and straight. *Stamen* filaments alternating long and short, 3.1–4.4 × 0.15–0.4 mm; *anthers* yellow, with red connective, dorsifixed, of two sizes, alternating large 0.4–0.5 × 0.4–0.5 mm, with small 0.3 × 0.3–0.35 mm, or uniform in size *c.* 0.5 × 0.25 mm. *Gynoeceum* stipe 1.4–2.1 mm long, ovary 1.7–2.3 × 0.4–0.7 mm, outer surface with dense, spreading, straight, white hairs *c.* 0.2 mm long; *style* filiform, attachment to ovary, well defined, 1.4–2.1 × 0.1–0.15 mm, with minute, terminal *stigma*; *ovules* 2, funicles *c.* 0.3 mm long. *Fruit* asymmetrical, flattened, *c.* 6 × 2.5 mm, with scattered hairs *c.* 0.2 mm long. *Seed* ellipsoid, *c.* 2.5 × 1.2 mm, brown with black spots, surface smooth, *aril* cream, U-shaped around hilum. (Figure 3)

Selected specimens. WESTERN AUSTRALIA: [localities withheld] 25 Feb. 2004, *S. Barrett* 1309 (PERTH 06990460); 23 Feb. 2006, *S. Barrett* 1512 (PERTH 07434111); 18 Jan. 1979, *M.D. Crisp* 9351 (CANB, MEL, PERTH 06216102); 28 Oct. 1962, *K.R. Newbey* 614 (PERTH 03149021, 00715026).

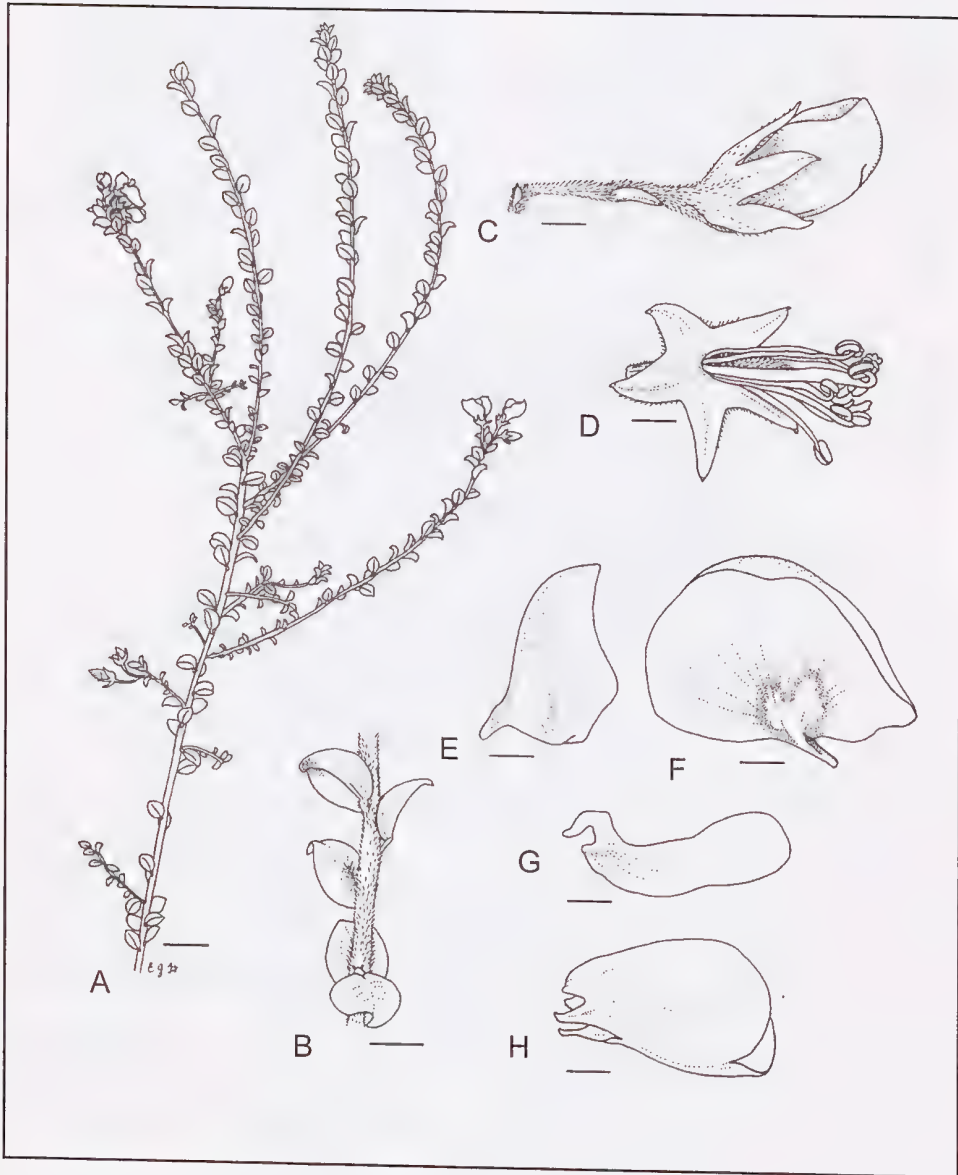


Figure 3. *Latrobea pinnacula*. A – erect habit; B – branch detail showing elliptic leaves; C – bud showing hairy calyx and emergent petals; D – calyx showing anthers and style, petals removed; E – outer surface of standard showing hooded apex; F – standard, inner surface; G – wing; H – keel. Drawn from M.D. Crisp 5272 (A, B); K.R. Newbey 614 (C–F). Scale bars = 8 mm (A); 2 mm (B); 1 mm (C–F).

Distribution and habitat. *Latrobea pinnacula* is confined to three populations in the Stirling Range in south-western Australia (Figure 2B). This species occurs in mallee heathland, in stony, peaty, or clayey-sand, or in white or grey sand with sandstone pebbles.

Flowering period. October to January.

Conservation status. This species occurs in only three, small populations in the Stirling Range and is currently listed as Priority Two under the DEC Conservation Codes for Western Australian Flora (Atkins 2006), as *L. elliptica* ms.

Etymology. The specific epithet *pinnacula* (Latin *pinnaculum* = *peak*) refers to the locality of this species on peaks in the Stirling Range.

Chromosome number. Unknown.

Notes. *Latrobea pinnacula* differs from *L. hirtella* (Turcz.) Benth. in having elliptic leaves, stipules present, petiole narrower than leaf base, leaves glabrous or with sparse hairs only at base of leaf, smaller bracteoles, shorter calyx lobes and smaller flowers. It differs from *L. recurva* in having mainly elliptical rather than obovate leaves, that are mainly sparsely rather than densely arranged, longer pedicels (3.3–5.8 mm compared with 2.3–3.5 mm long) and smaller flowers (standard length 4.5–6.3 mm compared with 8–9.1 mm long).

Latrobea recurva Chappill & C.F. Wilkins, *sp. nov.*

Latrobea colophonae Chappill & C.F. Wilkins affinis sed lobis calycis brevioribus 2.5–3.5 mm longis, non 4.0–4.8 mm longis, foliis edensioribus et apice magis recurvo differt.

Typus: Chillinup Nature Reserve, Western Australia [precise locality withheld for conservation purposes], 19 September 2000, *M.D. Crisp & L.G. Cook* MDC 9225 (*holo:* PERTH 06177042; *iso:* CANB 620657, MEL).

Latrobea recurva Chappill ms, Western Australian Herbarium, in FloraBase, <http://florabase.dec.wa.gov.au/> [accessed May 2007].

Shrub erect or procumbent, spreading, 0.3–1 × 0.5 m. *Stems* red-brown to yellow with green flat spots or tubercles, fine ribbed, with dense, appressed to spreading, straight hairs, 0.15–0.4 mm long. *Stipules* absent or caducous, dark red-brown, linear-oblong, erect, 0.1–0.15 × 0.1 mm. *Leaves* dense, or sparse, spreading; *petiole* pale yellow, wrinkled, 0.3–1.3 mm long; *blade* with tapering base, concolorous, grey-green or discolorous adaxial surface grey-green with dark red dots, over paler grey-green, tuberculate, not glaucous, concave at midvein, elliptical or obovate, 1.3–5.5 × 0.7–2.3 mm, abaxial surface with one prominent vein, mature leaves glabrous or apical leaves with scattered hairs, *c.* 0.2 mm long at base of leaf, and to 0.7 mm long on margin; margin entire or denticulate, flat, glabrous, apex recurved with apiculum dark red, deciduous or persistent, *c.* 0.1 mm long, or apex obtuse. *Flowers* 1–6 tightly clustered at the apex, without enclosing floral leaves. *Bracts* ovate, 0.6–2.7 × 0.5–1.2 mm, with marginal hairs. *Bracteoles* caducous from the middle or lower portion of the pedicel, narrowly-ovate or linear, 1.8–2.3 × 0.4–0.6 mm, abaxial surface and margin with scattered hairs. *Pedicels* (0.8–)2–3.5 mm long. *Buds* green with red spots, with moderately dense, white or gold, spreading hairs 0.35–0.6 mm long, on tubular portion and lobes, with 5 or 15 faint ribs, petals emerging from calyx



Figure 4. *Latrobea recurva*. A – erect habit, with 1–6 flowers tightly clustered at apex; B – branch detail showing obovate, recurved leaves with stipules at base of petiole; C – bud showing emergent petals, hairy calyx, bract and bracteoles on pedicel; D – calyx showing free filaments, anthers and style, petals removed; E – standard; F – wing; G – keel. Drawn from *M.D. Crisp* 6225 (A, B); *M.D. Crisp* 9225 (C–G). Scale bar = 8 mm (A); 2 mm (B); 1 mm (C–G).

before buds are fully developed, mature buds $3.5\text{--}6.5 \times 1.8\text{--}2$ mm, lobe apex with apiculum, straight, dark red, 0.15 mm long. *Hypanthium* 0.5–0.6 mm long. *Calyx* tube 0.9–1.3 mm long, lobes valvate, symmetrical, all split to same level, $2.4\text{--}3.5 \times 0.8\text{--}1.1$ mm, marginal and inner surface of lobe hairs present. *Standard* claw $1.3\text{--}1.8 \times 0.5\text{--}0.7$ mm, lamina yellow-orange on front, with dark red markings around cream eye at base, red-brown on back, sagittate, $6.5\text{--}7.5 \times 6.0\text{--}7.5$ mm, auricles absent, apex hooded, acute and incurved. *Wings* claw curved, 1.3–1.5 mm long, lamina yellow-orange, broader towards apex, $5.5\text{--}6.5 \times 1.3\text{--}1.9$ mm, auricles at base of adaxial margin, apex obtuse. *Keel* claw, straight, 1.2–1.6 mm long, lamina cream at base, pinkish-orange at tip, $6.5\text{--}7.3 \times 2.7\text{--}3.1$ mm, upper margin minutely papillate to 0.05 mm long, apex obtuse and straight. *Stamen* filaments alternating long and short, $5.5\text{--}7.3 \times 0.15\text{--}0.2$ mm; *anthers* cream-yellow, with red connective, dorsifixed, uniform size, $0.4\text{--}0.6 \times 0.25\text{--}0.3$ mm. *Gynoecium* stipe 0.2–0.3 mm long, ovary $2.5\text{--}3 \times 0.3\text{--}0.6$ mm, outer surface with dense, spreading, straight, white hairs 0.5–1.0 mm long; *style* filiform, attachment to ovary well defined, $3\text{--}5.9 \times 0.15$ mm with minute terminal *stigma*; *ovules* 2, funicles 0.15–0.2 mm long. *Fruit* and *seed* not seen. (Figure 4)

Selected specimens. WESTERN AUSTRALIA: [localities withheld] 18 Oct. 1962, T.E.H. Aplin 213 (PERTH 00712922); Sep. 1946, A. Ashby 147 (PERTH 00713333); 17 Nov. 1968, A.M. Baird s.n. (ALB., PERTH 04464001); 19 Sep. 2000, J.A. Chappill, M.D. Crisp & L. Cook JAC 6495A (PERTH 07463456); 18 Oct. 1902, A. Morrison 12605 (A, CANB, K, PERTH 00713384); Oct. 1965, R.D. Royce s.n. (K, PERTH 00713457); 21 Aug. 1963, V.E. Sands 638.14.18 (AD, PERTH 00712906, SYD); 25 Sep. 1982, A. Strid 20535 (K, PERTH 00712876).

Distribution and habitat. *Latrobea recurva* is known from the Lake Grace area to the Stirling Range in Western Australia (Figure 2C). This species is found in dense heathland, or seasonally wet eucalypt woodland, on grey or white sand over laterite.

Flowering period. July to November.

Conservation status. This species occurs in scattered populations south-east of the Stirling Range and is currently listed as Priority Three under DEC Conservation Codes for Western Australian Flora (Atkins 2006).

Etymology. The specific epithet *recurva* refers to the mainly recurved apex of the leaves.

Chromosome number. $2n = 14$ (Sands 1975; Voucher: Sands 638.14.18, as *Latrobea hirtella*).

Notes. *Latrobea recurva* differs from *L. pinnacula* in having leaves usually obovate rather than elliptical, longer style, and the outer calyx with lobe margins and towards the apex hairy rather than glabrous. It differs from *L. colophona* in having shorter calyx lobes 2.5–3.5 mm long, rather than 4.0–4.8 mm long, and less dense leaves with a more recurved apex.

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assistance and access to FloraBase, and to the School of Plant Biology at The University of Western Australia for provision of facilities. Sincere thanks to Paul Wilson for providing the Latin translation of the descriptions, Ellen Hickman for her lovely illustrations, and to the reviewer and Kelly Shepherd for their helpful comments.

Until her death in August 2006, Jennifer Chappill was the principal investigator, collaborating with Michael Crisp, for an ongoing *Latrobea* revision for “Flora of Australia.”

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